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Plus/minus passes, 6-1

System to take effect in fall of 2012; includes A-, no A+

Tim Weilert
Content Manager

The highly-debated plus-minus grade system passed last Tuesday. However, the proposal that passed was markedly different than the original proposal which first came under scrutiny last November. Building on informal decisions made during previous meetings, the Faculty Senate decided to amend the measure in order to allow for a grandfather clause. The amendment stipulated that the entire original plus-minus system will be instituted in 2012.

ASCSM President Kevin Duffy and Vice President Anant Pradhan were on hand to give a final presentation on behalf of undergraduate students. Addressing the Faculty Senate, Duffy said, "Senators, your vote over three months ago to defer this policy with the intent of

garnering student input exemplified your commitment to the Mines community and most certainly to the students." Duffy proceeded to recognize the importance of student involvement with regards to the issue at hand and sought to represent the views of the student population. "A grandfather clause is the right route to follow. For we believe that we should not change the expectations of students who enter Mines and go through to graduate. We feel that the faculty has adequately addressed this with the fall 2012 grandfather clause. Although we realize that this may not be the most ideal manifestation of the grandfather clause, but given the constraints of the situation we feel this is the best case scenario."

Pradhan covered the other main student concern: lower GPAs. "A large fraction of this school wants to go to medical, law, or

businesses schools, or compete for prestigious scholarships. All of these are directly impacted by having a very high GPA." Pradhan proposed two alternatives, the "balanced A system," and the "A+." Pradhan closed by saying, "At the end of the day, both of our organizations are looking for three things: fairness, balance, and an equitable solution to what has become a much greater problem than what it should have been at the start."

Upon hearing the proposals, the Faculty Senate asked a few more questions of the students in attendance then proceeded to finalize the measure. The final measure included the original plus-minus scale (which includes an A and A-, but no A+), and will be put into effect in 2012. Upon voting the measure passed with a vote of 6 to 1.

Einstein Bros. Bagels celebrates grand opening on Wednesday

Ian Littman
Assistant Webmaster

The new Einstein Bros. Bagels eatery attracted a stunning 400+ visitors Wednesday morning during its grand opening, according to Chuck Thienpont, Director of Campus Dining, and Nick Thanos, Retail Manager, in an e-mail sent out Thursday. The event, which lasted from 7:15 AM until 11:00 AM, included free samples of the restaurant's most popular bagels and pastries, a raffle for free "Darn Good Coffee" during finals week, and 10% off coupons for bagels bought during the grand opening.

This latest addition to the nationwide coffee and bagel chain, founded here in Golden, actually opened for business Monday, February 23, with setup occurring the Friday before. "It's good food, and it's right here on campus," remarked a staffer as she traded BlasterCard balance for an "everything" bagel with cream cheese "schmear" during lunch on Monday. Another staff member observed that BlasterCard capability (including use of Munch Money) would probably contribute greatly to the outlet's success, since it's a quick, easy currency for such payments.

Due to Aramark's contract with Mines for student food, catering, and vending, this Einstein Bros. is actually a franchise, rather than a

full-blown corporate branch. The food, however, comes directly from the Einstein Noah Restaurant Group, Inc. (Einstein Bros.' parent corporation), so a bagel at Mines is just as tasty as one from, for example, the branch near Colorado Mills. One caveat: due to the tight confines of the new Mines shop, some items (most notably soups) are currently not served.

Nonetheless, people like the food, which ranges from pastries to yogurt to deli-style sandwiches to, of course, coffee and bagels. A quick survey revealed that students think they'll eat at Einstein's a few times a week, taking some load off of the Digger Den, which will become the only fast food shop in the student center after the closure of the I-Club over spring break. Of the coffee, a Mines faculty member noted, "It's good. It's not just hot water, unlike some other restaurants."

The bottom line: regardless of whether students or faculty come in

for the bagels, coffee, sandwiches, yogurt, hot chocolate, or chai tea, the new bagel shop, located just inside the East Wing door of the CTLM, is a definite hit. They're open at an unprecedented-for-Aramark schedule: 7:15 AM to 1:00 PM, Monday through Friday and 5:00 to 11:00 PM, Sunday through Thursday. Aramark assumes mid-afternoon snackers will use vending machines or the Digger Den between 1:00 PM and 5:00 PM.



IAN LITTMAN / OREDIGGER

Hennebach lecture forecasts end of capitalism

Jake Rezac
Content Manager

Independent writer, grassroots organizer, and Universidad de la Tierra founder Gustavo Esteva described the impending end of neo-liberalism and capitalism to an audience of Mines students and faculty during Monday's Hennebach Lecture.

"What we are talking about is the end of the US as the head of the world... the end of globalization and the end of the imperialism of the US," proffered Esteva, who later added, "what happened in the last twenty years killed capitalism and it will be dead in a few years."

Esteva explained that an end to the Washington Consensus – a list of financial and political recommendations for unstable countries – and, consequently, the practice of neo-liberalism throughout the world contributed to the upcoming death of capitalism.

"Capitalism learned its lesson in the 1930's. It learned how to be prudent, how to keep capitalism going. Then in 1989 [when the Soviet Union fell], the reaction was 'we have the whole planet to ourselves,' and they abandoned everything keeping it going. This precipitated the end of capitalism," he explained, continuing, "what happened in the last twenty years [neo-liberalism] killed capitalism, and it will be dead in a few years."

The massive stimulus package – along with any of the current fixes being supported around the world – won't help the fall of the world economy or the fall of capitalism, he said.

"We are no longer in a period of business cycles... we are now suffering from size-cycles. If you want to control something, you have to see... what you want to control. The growth of the economy brought it to the size where you cannot see what you want to control. No one can see where the money is," Esteva warned. He advised further, "We are at the end of absolutist reasoning, and so at the end of the modern era. That means we are in the chaos where... new concepts and new rationales govern the new society... Perhaps one of the problems we face today is that we cannot use our rationality on today's problems."

Though Esteva's predictions are grim, he admits that he may be wrong.

"Anyone saying they know what will happen... they do not have enough information, and that applies to me as well."

Still, Esteva paraphrased his friend and prominent Austrian philosopher Ivan Illich, explaining why

he thinks he is right.

"A prophet is not one with a crystal ball. A prophet is someone who can read the present," something Esteva thinks he is doing.

Along with the death of the modern era, Esteva sees hope, ironically, in the death of another global institution: the commodities of land, labor, and money.

"We all know how [these commodities] started: the enclosure of the commons in England. With this, land became a commodity. And with the people thrown out of the commons, they became the commodity too. We are beyond the principle of scarcity in economics, and this is one way to describe what is happening today: people are enclosing the commons... today, in the world, millions of people are reclaiming the commons."

The reclamation of the commons – which Esteva regards as a traditional reclaiming of farm and grazing land from the state, or simply as the development of a common identity in a large city – is contrasted to Esteva's other view of successor to capitalism: dystopia.

"Orwell... in 1984 described something like what might happen... it is power for power itself; not power for specific terms, but the image of absolute power," Esteva said. "Even today, in London, ...they are attempting to control every aspect of someone's life."

Esteva believes commonism, his term for the reclamation of the commons, is a better alternative.

"[Those reclaiming the commons] are trying to create an alternative... instead of an era we are afraid of, they are creating an era we want... reclaiming the commons involves having the same means as you have ends."

Even in today's capitalist culture, Esteva believes that we can prepare for the communist future. He thinks we can do this by taking ourselves off the public waste-disposal grid.

"The separation of church and state was the precondition of democratic societies. In the same sense, for the freedom we desire, we need the separation of shit and state." He explained how waterless waste-disposal units have been put in place in small villages near his hometown of Oaxaca, Mexico. These, he claims, smell better than traditional toilets and don't require state-operation.

By building these sorts of "toilets" across the world, Esteva believes that commonism will grow, rather than dystopia, and the world will survive the collapse of capitalism.

Scientific discoveries this week

Jake Rezac, Content Manager

Edmonton, Alberta: Scientists at the University of Alberta and the National Research Council's National Institute for Nanotechnology have drastically improved the performance of plastic solar cells. Scientists prefer using plastic solar cells to silicon, because of the huge cost differences between the two materials. The plastic solar cells use different layers – one to absorb light, one to generate electricity – to improve the cells over 30 percent over the last two years. Researchers hope that in five to seven years plastic solar panels will be mass-produced.

Oxford, UK: A team of Oxford scientists has uncovered unsettling news in the fight against HIV; the HIV virus is evolving to escape the human immune system. According to researchers, it demonstrates the high-speed of evolution which has occurred in the short time since HIV has interacted with humans. Although this could be a bad sign for the fight against HIV, scientists are optimistic that different human responses could come into play and be more effective.

Berkeley, California: Scientists at The University of California-Berkeley and the University of Massachusetts-Amherst have developed new methods of nanoscale assembly which could dramatically improve the data storage of electronic media. According to the scientists, the technique – in which polymer chains assemble into very precise patterns – could allow for over one terabyte of data to fit on a surface the size of a quarter.

Northern Kenya, Africa: Scientists have discovered fossils of 1.5 million-year-old human footprints. The footprints, which belonged to the human ancestor homo ergaster, prove that humans have been walking upright for longer than previously thought. The fossils, which are similar to modern day feet, are in stark contrast to 3.5 million-year-old Australopithecus footprints found 30 years ago in Tanzania. The Australopithecines were closer to apes than modern-day humans and, according to archeologists, the footprint comparison demonstrates the changes between the two human ancestors over a two million year period.

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Headlines from around the world

Emily Trudell, Staff Writer

Media critics have stated that the newspaper industry is in “free fall” as the **Rocky Mountain News** printed its very last edition Friday with the headline “Good-bye, Colorado.” As more readers switch to online editions of periodicals, newspapers such as the Denver Post face cutbacks and layoffs.

Michelle Obama’s official portrait was revealed Friday. **The First Lady** chose the Blue Room of the White house as her background, and posed wearing a black sleeveless dress and a simple pearl necklace. The photo was taken by White House photographer Joyce N. Boghosian.

James Dobson, the evangelical leader of **Focus on the Family**, has stepped down from his position as the minister of the organization. Dobson, 72, has used his influential position to speak out against abortion rights, gay marriage, and even the popular Harry Potter series.

An **octopus** flooded the Santa Monica Pier Aquarium in California when it tugged on the valve in its tube, allowing hundreds of gallons of water to overflow the tank. While no sea creatures at the Aquarium were harmed, the new floors of the facilities were damaged.

Scientists have become increasingly concerned about corroding, **unexploded bombs** in the oceans surrounding Puerto Rico. The area is a former training site for the United States Navy, and it is estimated that there are hundreds of unexploded bombs on the sea floor, potentially leaking

toxic chemicals into the water.

A monk in **Southern China** set himself on fire Friday. The monk was reportedly holding a Tibetan flag, and was shot at by the police while he burned. It is believed that the monk immolated himself in protest of the banning of a New Year’s festival.

Over 40,000 **Somali refugees** displaced by drought and conflict in central and southern Somalia are returning to the country, though the area is still suffering from violence. The rush of refugees back to the country is most likely caused by the recent pull-out of Ethiopian

troops, who have been blamed for the killing of Somali citizens.

A study by the University of Plymouth published in *Applied Cognitive Psychology* showed that people who **doodle** tend to learn more that those who do not doodle, and also retain more information.

Ali Saleh Kahlah al-Marri, a terrorist from Qatar held on charges of conspiracy to provide support to **al-Qaeda**, was charged for his crimes after being held in the custody of the

United States since 2001.

Barack Obama named **Kathleen Sebelius**, governor of Kansas, as his nominee for Health and Human Services Secretary. Senator Tom Daschle was Obama’s original choice, but was forced to withdraw once it came out that he had not paid taxes on all of his earnings.

European government leaders at an **emergency summit** in Brussels vowed to uphold European Union (EU) principals. The summit was convened to create an united response to the global financial crisis.



Mines becomes more environmentally aware

Sarah Nelson
Staff Writer

"The Greenhouse Effect" is a simple name that has a devastating effect on the earth. At the Colorado School of Mines and elsewhere, students and civilians alike have been pulled from a sleepwalk to face up to the repercussions of modern civilization's lifestyle. The science of what drives global warming and how it has escalated is something familiar, a hot topic. However, while speaking scientifically is akin to speaking in a native tongue for many students here, the economic implications of climate control is a frontier that may consist of less familiar footing.

Thankfully, Dr. Robert Repetto provided, along with some refreshments, some much needed enlightenment on the economists' perspective on how climate control is a viable goal. Dr. Robert Repetto is a renowned environmental and resource economist. He has a Sc. from the London School of Economics as well as a PhD from Harvard University. Serving as the senior economist as well as the vice president at the World Resources Institute in Washington is an example of Repetto's list of accomplishments.

First addressed was the issue of feasibility - many people argue over the perils and economic cost of the transition away from fossil fuel dependency, but pointed out during the presentation was the fact that there have been multiple energy transitions in the past; from manual to motor, from water to steam, and then, steam to electric. With each change, there was some associated magnitude of anxiety, but the overall outcome was of

economic growth accompanied by a surge of innovation. Repetto stated that there is "no reason why that can't happen again" and that "the cost of making the transition is relatively small compared to the cost of not making it." Some barriers that make this shift from fossil fuel dependence particularly difficult is the fact that it "is a substantial and rapid transition," and while renewable energy sources such as wind, solar, biofuels, and geothermal are available in abundance, the constraint is on the part technology. Regardless, Repetto remained both optimistic and realistic in his assertion that "while most of us know our responsibilities towards the environment, it, nonetheless, works out best when people's ethics and their pocket-books are aligned." And this, he went on to say, is a relationship that is possible, both long and short term.

So, how does this shift begin? First, an incentive for companies to reduce their carbon footprint is required. Unfortunately, ideals of personal responsibility alone are not motive enough on a grand scale. Here, Dr. Robert Repetto presented two proposals on how companies could be persuaded to go green, both with their respective

pitfalls and advantages. One proposal is of a carbon tax. It would provide a subsequent revenue flow for the government, and it simplifies international transfers. However, the question remains on what the tax should be and how the tax trajectory should be regulated to ensure continued motivation for a substantial change.

Another option would be a Cap and Trade system; this approach is favored both by environmentalists and businessmen alike. This is because "it provides quantity certainty for the former and it's

familiar in the business arena." The question then arises as to what should be capped. Europe is currently using this method. Another possibility, Repetto brought up, was that of "requiring permits further upstream in order to sell fossil fuels." This approach requires decisions on how to allocate permits with one option being an auction. Pros to this method would be its price stabilization, ease of international trading and again, an additional source of revenue for the government as well as being comprehensive in nature.

Dr. Repetto concluded his speech with reiterating the importance of global cooperation and how any effort would be nearly futile in the absence of a unity between the countries in adopting a voluntary, self-enforcing, and stable policy in regards to climate control. Repetto's tone was hopeful in light of the new administrations "radically different attitude towards climate on both the science and policy fronts," and is hopeful and expectant of a near future where fossil fuels aren't needed to sustain a modern economy.



Dr. Repetto explains the economics of "going green"

ANDREW FERGUSON / OREDIGGER

Volunteers share stories

Andrew Aschenbrenner
Staff Writer

This year marks the 48th anniversary of the Peace Corps, an iconic agency that has sent more than 195,000 Americans to serve as volunteers in 139 countries around the world since 1961, when President John F. Kennedy established the program. Last week was Peace Corps Week, a time marking the anniversary of the creation of the Peace Corps and a time for returned volunteers to share their stories.

"Peace Corps Week is an opportunity for returned volunteers to share their stories, to let other people know about Peace Corps and what it did for them," communicated Clara Morris, a regional recruiter for the Peace Corps in the state of Colorado.

Six members of the Mines community, including three staff members, two current students, and a faculty member, shared their stories and views on their experiences at a Peace Corps information session last Friday.

The mission of Peace Corps has had three goals since its inception. "Two of the goals are cross-cultural, and one is related to skills," said Morris. Sessions like the one on Friday help fulfill the third goal.

Former volunteer and Mines staff member David Frossard has been on two tours with the Peace Corps in the Philippines and in Zambia. "The third goal is

to take the knowledge that you learned in another country and bring it back and tell Americans about the rest of the world," he explained. "This is a third-goal presentation."

Ginny Lee, Frossard's wife, who served with him in Zambia from 2003-2005, noted the opportunity that the session presented. "Peace Corps changes a lot of people," she said. "In two years of your life, it really changes how you think and who you are and how you relate to the world. I think that sharing the experience with other people lets them know that there are these opportunities out there."

Peace Corps had a booth at the spring Career Day, and received significant interest. "This year, the number of people that came up to the PC booth at Career Day was incredible," remarked Lee. "Your training and your two years experience is very valuable to add to your resume," added Morris.

The event had many sponsors, including the Colorado School of Mines section of the Society of Women Engineers, the Minority Engineering Program, Engineers Without Borders, and the Office of International Programs.

SWE President and CSM grad student Andrea Ham weighed in on the importance of Peace Corps, "I think the Peace Corps has such great opportunities that most people don't know about," she said. "Sponsoring the info

session is the least we can do to spread the word and encourage [Mines students] to use their skills in ways they might not have thought about."

All returned volunteers spoke very highly of their Peace Corps experience. "Peace Corps opened my eyes to other peoples and the way other people live," related Morris. "My whole life is different because of Peace Corps," added Frossard. "Going somewhere else, you see that everyone doesn't live like we live here," explained Lee.

When asked about the importance of the Peace Corps, Morris was clear, "I think the Peace Corps is the best foreign diplomacy program we have because we are just regular Americans bringing a good face of America to the small villages of the world... I think that we do incredible things for diplomacy."

For those interested in applying to join Peace Corps, Morris disclosed that the application process is currently taking about a year, but added, "Don't be intimidated. Just do it."

As Frossard explained, "Peace Corps isn't for everyone, but for the people whose minds match up with the Peace Corps philosophy, it's a way to really change your life, and its a fantastic way to take your life in a whole different direction."

For more information on the Peace Corps, go to www.peacecorps.gov.

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Understanding fractured reservoir system behaviors

Sophie Hancock
Staff Writer

Strain partitioning and its controlling effects on fracture distribution and fluid flow are intensively studied subjects by a broad mix of geoscientists and engineers. The applications of such knowledge are equally diverse, with relevance to petroleum and mineral production, water resources, and for many other construction and planning purposes.

The aims for Dr. Marte Gutierrez's Heiland lecture were to understand how fractures and *in situ* stress affects fluid flow and how we can relate fluid directionality to seismic velocity data. Gutierrez focused the talk towards better understanding fractured reservoir system behaviors in five themes.

Firstly, the hydromechanical behavior of individual fractures was addressed. The permeability of a fracture is a function of the relative balance of effective normal and shear stresses operating across

that fracture. As a result, the orientation and dimensions of the fracture and its asperity or roughness are very important in determining how a given fracture will respond in normal or shear stress dominated situations. Under increasing normal stress, fracture permeability will decrease, although unloading will not restore permeability as fully, and the original fracture aperture opening is never totally recovered after a loading event. Depth effects of increased normal stress loading, especially in soft rocks, also need to be quantified. Shear stress dominated regimes, however, will result in linear displacement of that fracture until the rock's yield strength is exceeded. Thus, at low shear stresses, the fracture will dilate, increasing the permeability up to several orders of magnitude, but at high shear, stress actually reduces the fracture permeability, further reducing where smearing occurs.

Secondly, a need for modeling fractured reservoirs particularly with

deformable models and not only static models was established. The elastic stresses in deformable reservoirs are more realistic and will produce more usable sweep efficiency values. One controversial modeling approach is the Representative Volume Elements (RVE) method, which groups a finite number of fractures sets with similar characteristics, e.g. length, orientation, spacing, persistence, and aperture size for each set. The RVE method may extend the value of static models and allow reservoir complexities in deformable models whilst avoiding computationally over-intensive requirements.

Stress effects were the third aspect covered, with stiffness estimates of strata needed to understand how shear waves may be split into fast S1 waves parallel to fractures and slow S2 waves perpendicular to fractures. Research is looking at a range of effective normal stress scenarios and aiming to predict S1 and S2 velocities and ultimately, to accurately predict the

corresponding permeabilities based on these velocities. Currently, laboratory work is being done by the USGS.

The fourth theme examined how simple seismic velocity models could take account of *in situ* stress and permeability. Stress as a tensorial property is determined by several factors, and Gutierrez's work is trying to resolve which factors have a direct major or minor control of its expression within anisotropic reservoirs. This work is important as understanding how stress will operate on a fractured reservoir controls fluid movements, and this could directly help determine the production strategy, including how changing the location of production wells will influence the internal reservoir stress field and ultimately, determine productivity.

In conclusion, 3D and complex fracture geometries were addressed, in particular continuum modeling and the ongoing development of reservoir simulations

attempting to couple flow and deformation style and intensity. Scaling was a key discussion area, with the need to upscale meter sized laboratory tests into kilometer scale models and the challenges that the definition of required rock properties introduces. Fracture scales and their likelihood for seismic profiling were also raised. Prof. Mike Batzle stated that, "The largest fractures, which often dominate flow, do not always produce a seismic signal, in contrast to smaller fractures which can be less significant for fluid transport, but which may be seismically imaged." This is an important paradox to appreciate, and for seismic interpreters and modelers to address going forward.

Dr. Gutierrez was keen to highlight the geomechanical aspects of fractured reservoir studies, which he felt are often overlooked. Dr. Gutierrez has an international engineering background including work in Japan and Norway and was based at Virginia Tech prior to joining CSM.

Growing gold nanowires

Alec Westerman
Staff Writer

"What we do is to watch materials grow," explained UCLA professor Suneel Kodambaka. "These experiments are done in an electron transmission microscope... you can gain a lot more powerful results than [by] cooking and looking." Kodambaka, who gave the Chemistry and Geochemistry lecture last Friday, discussed his work on nanowires, which he claims have applications in opto-electrics, transistors, and piezo-electrics. "We can control the shapes and sizes of [the] deposition structures," he explained, allowing for the applications to be realized.

Nanowires form from drops of a catalyst-containing mixture, which leave behind a precipitate.

As nanowires grow, the amount of catalyst, usually made of gold, tends to dwindle. This prevents nanowire growth from being viable.

Kodambaka explained his first response to this conundrum, which was to ask, "What are the possible methods by which the gold could go away?" Evaporation was considered impossible because the temperatures at which growth occurs were too low. However, two possibilities remained. The gold could be incorporated into the surface of the nanowire, or it could be carried away by surface diffusion. Eventually, it became clear that the latter was the cause of dissipation.

As a result of a better understanding of the problem, Kodambaka and his team were able to experiment with nanowire growth. Correlated data on nanowire structural manipulation followed, and it was found that introducing oxygen flux could stop gold diffusion. Oxygen, however, changes the crystal structure orientation, which is an unwanted side-effect.

Attempts by Kodambaka and

his colleagues to manipulate nanowires were furthered by an observation about the catalyst mixture drops, "It can be a solid; it can be a liquid... when you have a liquid you have a higher growth-rate." Because higher growth-rates are desirable in manipulating nanowires, Kodambaka designed a method to keep the drops in their liquid form. "By supersaturating the liquid, you can suppress the solidification." He continued, saying, "As you change the catalyst chemistry you're also changing the growth kinetics." Unfortunately, changing the kinetics can change the structure of a nanowire in undesired ways.

Kodambaka and his team continue to work on the problem, hoping to come to a solution soon. They believe that with further effort, they can discover a solution and effectively and successfully use their work on nanowire growth in outside applications.

Studying Chile's economics

Robert Gill
Assistant Business Manager

The economy in the United States has been the subject of debate for quite awhile now. However, there are many other economies where their investment potential is in question.

Dr. John E. Tilton, Colorado School of Mines professor, examined the economic conditions of Chile in his presentation "Assessing the Investment Climate in Mining Countries" last Thursday. Dr. Tilton focused on data taken from 1996-2005.

"Chile was losing its ability to compete in mineral markets," said Tilton. However, this fact reflects the overall mining economic conditions in Chile. This statement does not reflect the investment potential of the mines.

"We need a reliable measure of how the investment climate is changing in major mining countries," said Tilton. According to Tilton, there are two groups for determining the investment attractiveness of a country, the political and economic environment and the perception of geological potential by investors.

The political and economic environment is a reflection of the country as a whole. When the country's government is not considered stable, investors tend to avoid the area in order to safeguard their capital. The perception of geological potential also changes over time due to changes in technology; while the ground itself may not change much, prospectors will see different images at different times due to the tools they use.

One of the main ways to judge the investment attractiveness of a country is to use a survey. Currently, the standard survey used is the Fraser Institute's Annual Survey of Mining Companies. "It is fair to say that this survey is not perfect," said Tilton. Once again, the survey is based on perceptions. Also, the survey only receives responses to around 10% of the requests it sends out.

"This big problem with surveys is that they only capture one or two of the many determining factors out there," said Dr. Tilton. Instead, investors must focus on the three stages of exploration: grassroots, late stage, and mine site.

The best sign for predicting the economic attractiveness is to examine exploration expenditures. Mine

site exploration occurs only after a site has been approved for mining, so there is not much investment potential in it. Late stage exploration also is not very sensible to base economic attractiveness off of because while it is pretty certain the metal is there, the economic returns are marginal.

In order to examine the economic attractiveness of a country, it is important to "focus on a country's share of world grassroots exploration for specific metals," according to Tilton. Chile has maintained, if not slightly increased, its world share of grassroots copper exploration. What has been declining is the late stage gold exploration in the country, which can be attributed to the economic conditions of the metal, not the country.

Thus, while Chile may have fallen in terms of overall metals exploration in the world, there is little to worry about. "It has little or no evidence of losing its competitiveness with the rest of the world," said Tilton. This approach allows for a more realistic economic outlook on mining countries.

If anyone is interested in reading the original report, please contact Dr. Tilton at jtilton@mines.edu.



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Concerts in the library: a folk singer’s favorite songs

Neelha Mudigonda
Content Manager

Last week’s Concerts in the Library was by Jeb Martin, a professional folk singer and a guitarist in the troubadour tradition. Martin immediately caught the attention of the audience with his sense of humor by conveying, “I’m originally from Austin, Texas; that’s why I’m a little weird.” The concert, held in the Boettcher room of the Arthur Lakes Library, consisted of about twenty elderly folk enjoying the refreshments and the simple music being played and sung by Martin.

Martin selected a variety of music to play at the concert, composed by famous musicians, local townspeople, and Martin himself. He opened the concert by playing “Mr. Bojangles,” a song originally composed by Bob Dylan. Then, Martin continued by playing “Freight Train” by Elizabeth Cotten. This song, Martin said, was written when Cotten worked as a maid, and “her family caught her with a guitar one day and threw it away.” Martin further reminisced by saying, “This song reminds me of my grandmother; she also died at the age of 93, which was when Elizabeth Cotton died, I think. My

grandmother taught piano for over ten years.” Another song performed at the concert was called “She never spoke Spanish to me” by Joe Ely. Martin explained that this song was special to him because Joe Ely, like Martin, was also originally from Texas; Joe Ely was a part of The Flatlanders when he wrote this song. Another couple of songs played by Martin included “Don’t Think Twice, It’s All Right” by Bob Dylan and “If I Were a Carpenter” by Tim Hardin. One of the songs that received the most appreciated was “Christmas in Washington” by Steve

Earle. “This is one of my favorite songs even though it has nothing to do with Christmas,” said Martin, “This song is about lack of leadership.” Martin related to song by explaining that the first time he saw President Obama speak on television, Martin thought Obama could be the president of the United States. Martin continued to say, “I truly believe that [Obama] has the potential to be the leader that we’re looking for.” Martin concluded the concert by performing “Fireflies and Broken Hearts” that he wrote himself and “Buckets of Rain, Buckets of Tears,” another song by Bob

Dylan. Martin stated, “I thought of the title, ‘Fireflies and Broken Hearts,’ about ten years before I actually wrote the song;” this is a song about failures and successes in life. Martin further expressed his thanks to the audience for coming and “supporting this great program that Mines has going.” With his nonchalant conversations with the audience and remarks throughout the concert, Martin’s music seemed to have been greatly enjoyed and appreciated by everyone; Martin is expected to return to Mines once again to share his talent with the audience.

Ask Andrew

Andrew Aschenbrenner
Staff Writer

Dear Andrew,
I have a few acquaintances that I'd like to get to know better. They're intelligent and fun to spend time with. The only problem is they're single guys and I don't want to give the impression that I'm asking them out. I think bringing along another friend would be awkward because the guys are kind of shy. How do I set up time to hang out without them thinking it's a date?

Sincerely,
Mishap Waiting to Happen

Dear Mishap,
I'm glad you recognize that you have to approach this situation carefully. If you've eliminated the possibility of bringing along another friend and are set on spending time with them one-on-one, maybe you should ask them out. Otherwise, take it slow. Be careful not to give any of them an unintended signal that he is more than a friend.
I would advise against a one-on-one relationship if you don't want one of them thinking it's a date. The only exception would be if they were not interested in a romantic relationship from the start, and even that has the potential to turn awkward later on in the friendship.
What I would advise is to try to form a group of friends with yourself and your acquaintances. Avoid embarrassing your new friends at all costs, at least initially. If they are shy, the best way to get to know them and to get them out of their shell is to form a small group where eventually you will all be comfortable with each other. A small group will help you establish friendships without the risk of physical and emotional confusion.

Need advice? Email your question to askandrew.oredigger@gmail.com!

Club Spotlight: Mines Entrepreneurship Club

Ian Littman
Assistant Webmaster

“Mines Entrepreneurship Club (MEC) provides a forum for students to discuss and critique potential business ideas while protecting the students’ intellectual property rights,” said Tony Aspland, Vice President of the organization, which meets on Tuesdays at 5 PM in Berthoud Hall 243. “MEC frequently sponsors guest speakers to present entrepreneurial concepts such as creative thinking, opportunity recognition, marketing, the securing of intellectual property, prototype development, and more.”
The organization’s president, graduate student LB Williams, is an entrepreneur herself, holding down three distinct ventures while taking a light course load here at Mines due to the painful after effects of a car accident a few years ago. Of MEC, she says a big tenet is “opportunity recognition; it is [so] frustrating for an inventor to wait too long and watch their idea fade away or be capitalized upon by someone else.”
Last week’s meeting, determined mere weeks in advance and in tune with the dynamic nature of the club, was rather exceptional, according to the club members. Usually, meetings run about an hour, with brainstorming, presentations, exchange of ideas, and maybe a lecture on an important facet of entrepreneurship. Last Tuesday consisted of three presentations,

ranging from a polished network marketing PowerPoint to a rough-cut explanation of a research prototype and the business basis for it.
The first presentation Tuesday night was by Tyler Robbins and Matthew Harris, two Mechanical Engineering students who came upon a rather new, multilevel marketing opportunity, Or Gano Gold, brought to the U.S. in the last six months. The premise: people like coffee, especially if it’s good for you (Or Gano Gold, infused with the herb ganoderma, purportedly is), and they like entrepreneurial ventures. You can buy a membership to get the brew at wholesale or sign up for a tiered distributorship and get your money’s worth in coffee to boot.
Second, Jake Phillips, a Petroleum Engineering student, presented a polished PowerPoint about a rapidly growing multilevel marketing corporation based on travel, World Ventures. The Dallas-based organization offers two products: a membership program that provides steep discounts on exotic travel packages and an affiliate travel website program that checks prices across the internet and usually ends up selling the lowest trip package out of anyone. Both products allow for a multilevel referral program to waive membership fees or gain commission and residual profits. This company, not to be confused with the currently-under-litigation YTB, has made \$5,000 per month or more in income for its top 3% of entrepre-

neurs and has netted the presenter and a few others in the room a few thousand dollars apiece so far.
The final presentation of the night was by Chris Krumm and Peng Zhao, Electrical Engineering graduate students. Their idea: an electrically-driven, ammonia-powered bus. They are working with various faculty members to make this product a reality and have secured, among other things, a bus to modify and a matching grant for \$100,000 for this project. They are looking for another \$100,000 to build and test the prototype. Of the project, Chris says, “We believe that we can produce a bus that will be much more fuel efficient than what the competition can come up with, and we can provide a price buffer against gasoline prices because ammonia can be made not only from the Haber process but from renewable energy by electrolyzing water into hydrogen and then combination with Nitrogen gas (research is ongoing concerning direct solid state methods of electrolyzing water with presence of nitrogen directly into ammonia).”
MEC’s next meeting will be the Tuesday after Spring Break and will concern various funding options for entrepreneurial ventures. “MEC brings knowledge, experience, enthusiasm, and practical opportunity to each member,” Williams notes. “We also have a great time doing it! No idea is too stupid or too grand.”
More information about the Mines Entrepreneurship Club can be found at <http://tr.im/gRp4>.

Run for Student Government

Why?

- Represent your fellow students
- Serve the CSM community

How?

- Pick up an election packet in the Student Activities office starting March 2nd.
- Packet is due with 50 signatures by March 19th.

When?

- Campaigning begins March 20th
- Election March 30th and 31st

What else?

All candidates must attend either the ASCSM meeting on March 5th, or an informational meeting on March 6th (2 p.m. SA workroom)

Contact Kevin Duffy (kduffy@mines.edu) with any questions

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Geek of the Week A

...Andrew Fager, Sophomore: Computer Science

Ian Littman
Assistant Webmaster

Do you consider yourself a geek?

Yes, I'm a geek. I've known it my whole life.

What is the geekiest thing you own?

Well I have a box of old motherboards at my mom's house, so I guess that's the geekiest thing I own.

Star Trek or Star Wars?

I'm a Trekkie. But I enjoy the old Star Wars, and all Star Wars music.

Which character?

I'm all about Data.

What's the geekiest thing you've ever done?

Well, at this skating competition, I was talking with my coach about rotating an organic mole-

cule along three axes, diagraming it out with our fingers on a brick wall. I believe it was a protein of some sort.

Favorite movie?

Final Fantasy VII: Advent Children

Are you involved in any clubs?

None at the moment, but I've thought about LUG (Linux Users Group) and entrepreneurial clubs.

Do you have any phobias or

pet peeves?

Texting while I'm attempting a

conversation. That's about it. But even I've been known to do this occasionally.

Any hobbies?

Well, I Figure Skate, but I would consider it more of a sport than a hobby, so woodcarving.

Why Mines?

They were the first place that really seemed to want me and accepted me right off. I then learned how much I liked the general

character of the school. That and I could be a geek even around my friends.

What's your favorite class here?

Engineering Cultures in the Developing World.

What do you plan on doing after leaving Mines?

Probably Grad school, but that's only in the developmental stages.

Geeky joke?

Really, I'm not the comedian, but I always enjoy the "Why is 6 afraid of 7, because 789"

Groan

Hey, it makes me laugh. Maybe because I have my mom's sense of humor.

Mac or PC?

PC, but my girlfriend is persuading me to Macs, that and I don't like Vista.



IAN LITTMAN / OREDIGGER

Geek of the Week B

...James Brown, Sophomore: Applied Math

Benjamin Johnson
Staff Writer

Do you consider yourself a geek?

I don't know. Does liking Guitar Hero, math, and Star Wars count as being a geek? If so, then I am a geek.

Do you think others consider you a geek?

Some people do. I'm pretty athletic, so sometimes that gets me out of the geek category.

Do you have any strange talents?

Not really, but my thumbs are really short, is that close enough?

What is the geekiest thing you own?

Probably my Stars Wars books, or maybe my three Sudoku books.

What is the geekiest thing you have done in col-

lege?

Well, hmm, I stayed up until four in the morning reading a Star Wars book; my roommate went to bed at eleven.

What made you choose Mines?

The fact that it is in Colorado and I didn't have to declare my major until my sophomore year. The community here is pretty cool too.

What class is your favorite and why?

I would say Calc 3 because of the teacher. Gus Grievell is probably the best teacher I have ever had.

What do you plan on doing after college?

Probably teaching. I just like school that much.

What are your hobbies?

Reading, Guitar Hero, basketball, soccer, and foosball.

Which hobby is your favorite and why?

Right now, probably basketball because I am on an IM team that is kicking everyone's butt. It is called the Caucasian Invasion.

Are you racist?

No, but my entire team is made up of white people, so we de-

cided white people could play basketball, hence the team name.

If you were stuck on a deserted, barren island and could have three items, what would they be?

Can they be people?

Sure.

Alright, um, the Bible, Jennifer... I'm trying to think of the biggest piece of food possible, let's say a cow.

Who is Jennifer?

My girlfriend, she goes to school in Colorado Springs.

Why didn't you go with her?

Partly because we started dating after I already decided to go to Mines.

Why didn't she go with you?

She wants to be an elementary school teacher and there is not much of a major like that here.

What is an embarrassing fact about you?

There are lots of these. This one time on our way up to a basketball game in high school, I got 'pant-seed' in front of the entire guys and girls teams, including my girlfriend at the time; that was pretty embarrassing.

What is your favorite aspect of Mines?

I would have to say the community.

You already said that.

Campus Crusade then, I love all the people in that club and what they are all about.

What would you do with a million dollars?

I would put \$100,000 of it away in case I needed it to buy a house or car later in life and the rest I would try to give away.

Who would you give it to?

Probably to one of the organizations that provide clean water to the world. I think it is pretty terrible that so many people don't have water that can keep them alive instead of killing them.

Wellness Day returns to CSM

Brandy Laudig
Staff Writer

Wellness Day was held this Friday, February 27 from 10:30 AM – 1:30 PM in the Student Center Ballrooms A and B. From little massages to a mass body index test, it was a really great event. Tara Davis said that "Vitamin Cottage's booth had the best give-aways," and she was really excited "to learn about what the numbers on a blood pressure test actually meant." There were many different types of booths which allowed people to learn a lot about the different health and wellness opportunities available in Golden.

Many different companies attended this year's annual event, including campus services like the Health Center and Counseling Center. Natural Grocers by Vitamin Cottage was one of the most popular booths. Paula Gehloff from their booth said that "[Natural Grocers] like to empower people to take responsibility for their own health." They offer free 1 hour consultation with people who wish to learn more about proper dieting.

Overall, Wellness Day was a big hit with everyone who attended. Emily Valora, a personal trainer at Mines said that she "gets excited when everyone

around her is excited about getting in shape and being healthy overall." I know I can't wait until the next Wellness Day to learn more about what the Mines and Golden Community has to offer.



ALL PHOTOS ANDREW FERGUSON / OREDIGGER



BENJAMIN JOHNSON / OREDIGGER

Concert review: Annuals at the Hi-Dive

Tim Weilert
Content Manager

There is a sticky note that has been on the wall behind my desk since January. It simply says “Annuals, Feb 28, Hi-Dive, \$10.” I can finally remove it, now that the anticipation of the coming concert has come and gone; the Annuals came to town and have now moved further along in their winter tour. The Saturday night show was another highly hyped show, receiving nods from Westword and The Onion. As I arrived at the Hi-Dive, the night of bluesy-folk-rock began.

First up was a group called What Laura Says, from Tempe, Arizona. Their music is best described in this way: Imagine the Beatles with their vintage guitars and keyboards. Now, make the fab-four into a quintet of long-haired jam-rocker types. Throw in some inventive percussion, add a touch of bluegrass and you’ve got the What Laura Says set from Saturday night.

Perhaps one of the highlights of the evening was the young and talented Jessica Lea Mayfield. On tour with a band that features her own brother on upright bass, the 19-year-old Mayfield is living the musician’s dream. Her sound is

blues and folk, with some classic influences such as Buddy Holly. Playing through her set, Mayfield’s distinct soft voice reminded me of listening to a Billie Holiday record; it was so incredibly blue. Not only was her delivery blue, but so were her lyrics. Mixing in some old-fashioned country style with a touch of extra reverb, Mayfield had the entire house enthralled. As she left the stage I personally felt a little down from the blueness of the set, ready for some more upbeat tunes.

The Annuals certainly are an inventive bunch. After setting up the stage for the six-person band, the show began with all of the lights turning off. Suddenly colorful flashes of light filled the room as various parts of clear drum kits rigged with LEDs flashed in unison with the drumming. From there on out, the Annuals put on a spectacular set. Playing heavily from their latest release **Such Fun**, the Raleigh, NC, based-band churned out song after song, each with a bigger sound than the last. Singer Adam Baker was right on that night, hitting the notes with a passionate intensity. My personal favorites were “Brother” and “Confessor.” Overall, the Annuals unique indie-pop sound played well live, better than on their recordings.

TIM WEILERT / OREDIGGER



Must See Movies Behind the scenes

Benjamin M. Weilert
Staff Writer

Movies tend to have a mystique about their production. The final product that the audience sees up on the screen usually takes hours of extra footage, more hours of special effects and even more hours of editing. The general public will occasionally hear about some tirade on the part of some high budget director or actor, like Christian Bale for the new *Terminator* movie. Due to the personalities of the dramatic persona involved on the screen, it’s no wonder that the behind the scenes of movies would eventually make its way to the setting of films. This week’s Must See Movies examine what happens when the cameras are off, and the drama involved with drama queens.

1. Singin’ in the Rain (1952)
One of the most revolutionary advancements in the world of film was the addition of sound (for movies before this milestone, please see last week’s Must See Movies). *Singin’ in the Rain* ex-

amines this transition from silent films to the world of spoken dialogue. When the voices of the actual actors and actresses are added to the film, it is made blatantly obvious that looks aren’t the only thing driving movies anymore. The drama queen Lina Lamont looks good on paper, but when she opens her mouth, she has nothing to recommend her. In order to get over the hurdle of Lina’s voice, even after voice coaching, the best solution seems to be an overdub with the voice of Kathy Selden, an aspiring actress. Drama ensues as the film does well and the secret of Lina’s real voice is finally found out (this happened in real life with the musical, *West Side Story* (1961)). Possibly the best musical of all time, the American Film Institute (AFI) has placed *Singin’ in the Rain* as the fifth best movie of all time on its top 100 list.

2. Sunset Boulevard (1950)
Apparently the life of a silent film actress just exudes drama, as seen in *Singin’ in the Rain* and the 1950 classic, *Sun-*

Music Review

Natural Selection. 1090 Club

Tim Weilert
Content Manager

Background: 1090 Club has been a busy group. Since I first saw the band two years ago, opening for Waking Ashland, they’ve toured extensively and put together a brand new record called **Natural Selection**. When I first saw 1090 Club, they caught my attention with their non-traditional setup and distinct sound. Of all the indie bands out there, 1090 Club is one of the

few groups I know of that employs extensive piano and violin, while shunning the bass guitar.

After seeing 1090 Club again last week (this time opening for The Applesseed Cast), I noticed that something about them had changed: they had intensified and focused their

sound. A few days later, our music blog “Something Like Sound” was contacted by the band’s label with an offer to review the yet-to-be-released record **Natural Selection**. The record is an exciting mix of rock, indie, and pop that will appeal to fans of The Get Up Kids, Modest Mouse, and similar acts.

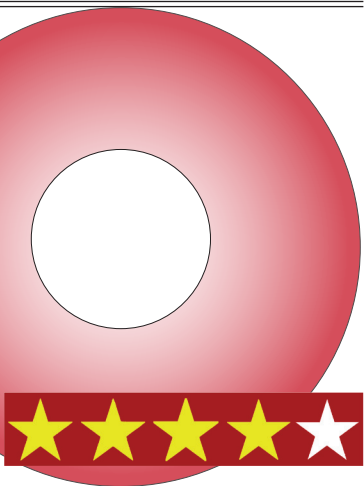
Best Song: This is really a toss up, there are a number of great tracks on the record. Narrowing

it to two, “ITSON” and “Happiness” stand out and help establish the first half of the album. “ITSON” has some of the catchiest lyrical hooks I’ve heard on an opening song in a while, in addition to the in-your-face beats and instruments that kick open the first track. “Happiness” is another



TIM WEILERT / OREDIGGER

1090 Club opened for The Applesseed Cast on February 21 at the Hi-Dive.



hard-hitting mix of violin, guitar, piano, drums and vocals. With a good dynamic, this track uses layering to emphasize lyrics during verses and instrumentation during the chorus.

Song To Skip: Ironically, a song titled “Skipping” is the track to skip. It’s not that it’s a bad song, it simply is more laid back than the rest of the album, wandering between heavy instrumental interludes and reverb-laden vocals. The hard-to-follow format of the song causes it to blend into the back end of the album.

Final Thoughts: After seeing 1090 Club perform with intensity and vigor, it’s nice to see that their sophomore release lives up to the sound of their live show. They definitely have an easily accessible, yet distinct sound that will certainly take them a long way in the music world. **Natural Selection** comes out March 24, 2009 on SideCho Records.

Beer Review

Akira Rattenbury
Staff Writer

A voyage east past South Table will bring you to the parking lot confluence of Wal-Mart and the well-lit automatic sliding door “super liquor mart” called Applejack’s. Perusing the stacked aisles and glancing longingly at the sparse “Import” section, I ventured to the elitist realm of bombers and singles near the back. The single beer array spanned two full racks with a healthy portion of “imports” from beer-mother Europe. Needless to say, I found my new haven for the semester’s imbibing.

Last week’s refreshing saison encouraged me to dig deeper for a crisper ale of malted refinement. I immediately noticed the little Baltic brew, Aldaris Porteris, and for just \$2.29, this Latvian single stole my heart.

The Porteris bottle, which looks like a plain and ordinary European lager, is not like its American cousins touting bold-lettered labeling glorifying themselves. Held to the light, I immediately knew I found

what I wanted. This dark to nearly opaque porter with amber to purplish hues looked delicious. The first pour unleashed a syrupy amber elixir with a thick yellow coiffure of suds and dense lacing. Very nice!

Color, however, is truly skin deep. This beer’s sinister looks matched poorly with its smell, which was the equivalent of grocery store flowers to a real florist’s shop. The looks of a porter were there, but the smell was atypically weak. It took a deep huff to parse out the subtle hints of raisin-y caramel. Surprisingly, the Porteris’s lack of odor gave way to a very well rounded flavor.

The slightly gummy mouthfeel with bits of toffee and caramel immediately lets you know you are drinking a dark beer. The malts have been cooked to perfection. There isn’t a smoky, overdone roasted chutzpa that overwhelms the pallet like some American attempts.

Interestingly, Baltic porters since the 1700’s were known as strong, highly alcoholic, and heavily roasted to cover up imperfections. This was due to poor craftsmanship (blame the Russians) and the need to travel

Aldaris Porteris

to and satisfy troops fighting in Scandinavia.

The Porteris seemingly disregards its lineage, and instead lends a balanced malt flavor which carries all the way through the excellent, smooth finish.

The finish is remarkably refreshing. Unlike some porters or stouter beers, which leave an unwelcome lingering aftertaste, the Porteris lets go at the right time. To be honest, there is a bitter hint of dark fruits that resonates, but this pairs well with barbecued meats and most rich cheeses, and dissipates appropriately.

“Since 1865” is a long time, but just right for beer-making perfection. Through Russian invasions, two world wars, and Soviet control, this beer has stood the test of time. Perhaps milder than it’s early iterations, I like to think this beer has grown more distinguished and refined with age. The Porteris hooks you with its looks, chides you with its mild smell, and captivates you with its charming taste. Good work, Eastern Europe. Next up: Canada, eh?

set Boulevard. William Holden portrays Joe Gillis, a screenwriter who is out of money and out of optimism. While trying to lose some repo men, he happens to find himself on Sunset Boulevard at the luxurious mansion of Norma Desmond (Gloria Swanson). Norma used to be big in the era of silent films and has since become a forgotten figure with the advancement of films into the time of talkies. In order to come back into the public spotlight, she gets Joe to write her into a remake of the film *Salome*. As Joe tries to juggle keeping Norma happy along with his own life, he eventually gets in over his head

- figuratively, and with water in a pool. *Sunset Boulevard* is home to such famous quotes as, “All right, Mr. DeMille, I’m ready for my close-up,” and, “I am big! It’s the pictures that got small,” both said by Norma Desmond. AFI placed *Sunset Boulevard* at #16 on its top 100 list.

3. Sullivan’s Travels (1941)
Most people have heard of method actors, but method directors? In *Sullivan’s Travels*, Joel McCrea portrays John L. Lloyd “Sully” Sullivan, a successful Hollywood director who decides to hit the road as a hobo in order to more fully understand the life of the poor in prepara-

tion for his new film. However, he just can’t seem to shake Hollywood and keeps being drawn back toward it. That is until he is presumed dead. Once he no longer exists, he gets caught up in the poorest of poor communities when he is taken to jail. Learning from those around him and the personal experiences of his travels, Sullivan comes to a realization that the world does not need to see a serious film about the poor, the world needs to be able to laugh. A new arrival on the AFI top 100 list, *Sullivan’s Travels* is placed at #61.

For Homework – See For Your Consideration (2006)



How the tubes work

Ian Littman, Tech Break Columnist

You've probably heard the now-quintessential quote by former senator Ted Stevens, "The internet isn't a truck, it's a series of tubes!" Though he apparently didn't know what he was talking about, when you look at the internet on a network scale, he wasn't too far from the truth. Generally, the first thought that comes to mind when you think of tubes is water, which can go faster under pressure; light and electrons, which flow through the real "pipes" that make up the internet, can't do that.

So, how exactly *does* the internet work? Good question. On a hardware level, it's a bunch of "switches" and "routers" forwarding electrical, electromagnetic, or optical signals from one place to another. In the grand scheme of things, "one place" and "another" are connected by fiber-optic cable along the US's railway routes, since it's easier to lease trenching rights for the cable from one entity than a few dozen, a few hundred, or even a few thousand, depending on how long the fiber run has to be.

The time it takes for data to get from one point to another is technically the distance between the two points via cable divided by the speed of light. In reality, since the glass cabling doesn't provide an infinitely narrow path to guide the light from point A to point B, said light will bounce off the inside walls of the cabling, effectively reducing straight-line speed by an amount proportional to the diameter of the "clear" glass inside. There are two major types of fiber cabling due to this fact: more expensive, "single mode" fiber with a very narrow core for long-haul usage, and cheaper, "fatter" multi mode fiber for shorter runs.

Still, it's pretty amazing how fast a piece of data can go from coast to coast. A packet of data, including routing delays, can make it from Los Angeles to Wash-

ington, D.C. and back in 70 milliseconds, so long as it stays on the same network.

So the question arises, what's a network? Isn't the internet just a bunch of computers tied together over long distance links? Yes, but these long distance links are owned by various communications companies, and in many cases, you need to switch between them to get to an internet destination.

pushed through it), traffic might have gone through NTT (Japan's AT&T, who has a national backbone network as well). Alternately, the FRGP's link to Level3 (probably the largest international backbone in the world) could have been used to connect directly to Facebook, but wasn't, possibly due to it being more expensive or more congested than Qwest.

If you have Comcast,

hands your connection off to from their DSL network, though choosing someone other than Qwest usually costs extra money. One example, Front Range Internet, Inc. (FRII for short), would land you on Level3, making for a more direct route to Facebook. Another, 4Dvision, would probably also route the traffic through Level3, but would use Reliance Globalcom as an intermediary. In any case,

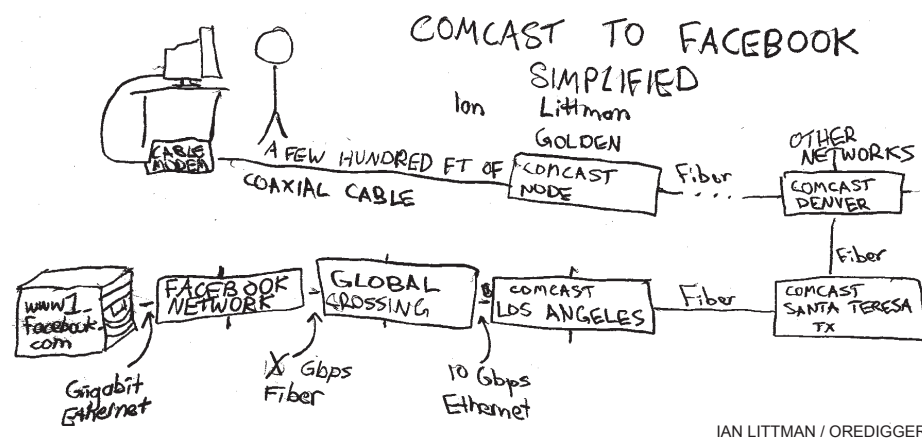
third-party ISP traffic would go through Denver to Level3, thence to Facebook, whereas Qwest switches to Global Crossing elsewhere, even though Global Crossing provides service in Denver.

This provider switching at different locations, particularly among big carriers, is called "peering." There are several locations in the US, and many worldwide, where this activity (internet traffic switching networks free of charge to either party) happens, though not all providers peer in all locations. Additionally, some networks prefer peering with some providers over others, especially if "others" means for-pay backbone access. For example, Comcast apparently buys internet access from Level3 in Denver, however, if they can reach an internet destination through low- or no-cost peering with TW Telecom (another, more minor, internet backbone) or Cogent (a huge, cheap, scrappy backbone provider) in LA, they'll do it, even if the destination network is in Denver and uses Level3 as one of their providers. These peering arrangements change from time to time. A rather convenient example: on Friday, Qwest started peering in Denver with TW Telecom, currently their only "peering session" in town. This, in effect, means that any web

hosts in Denver can use TW Telecom or Qwest for their internet access and still reach DSL customers without their traffic going out of town. In short, peering between internet networks is a very heterogeneous beast and could mean the difference between going from Denver to Virginia directly, or going to LA first. Yet, that's what makes the system interesting.

A case in point for network peering and performance: if you want maximum speed to Qwest, Comcast and FRGP subscribers in Denver - you should probably get web space in SoftLayer in Dallas. The reason: no provider in Denver has the correct peering to make sure both Comcast and Qwest traffic stays in town; it's one or the other, and if one provider's traffic stays in Denver, the other's usually goes to Dallas and back, or even to LA and back. SoftLayer doesn't have a direct connection with Qwest, but they do have an indirect route through NTT, and they connect with Comcast's national backbone directly. So, no matter which provider you're using, your traffic goes directly to Dallas and back, which is a good thing, especially for game servers and the like. The company also buys internet access from (or peers with) another five or six providers in Dallas to make sure latency (the time it takes to make it from you to the server and back) is as low as possible.

The above is just one facet of how the internet works; between YouTube, Google, and places like DSLReports.com, a curious soul can learn more about the strange and wonderful communications system on which everyone depends today. Or ask me; read and comment on blog posts at <http://minesblog.com/techbreak> or e-mail me at ilittman@mines.edu; if your question, internet or otherwise, is worthy, it may well be the subject of an upcoming Tech Break.



For example, try going to Facebook.com. First, your computer checks to see what IP (internet protocol) address Facebook.com points to. Usually, this happens with a Comcast server, but this in itself might be a trip to the internet at large (or the information might be on your home router or computer if you've visited the site just a little while ago). Next, your computer sends a request to Facebook's IP address for the main page at Facebook.com. Here's where the internet magic starts. Depending on what internet provider you're on, your internet traffic will take a different route.

If you're using Mines' network (or are online via the VPN), your traffic goes out to the Front Range Giga Pop Research & Education (FRGP R&E) network, then switches to Qwest, at which point you could say you're officially "on the internet." The traffic then changes over to Global Crossing (a big national backbone network), then to Facebook's network (where their website is) in California. If Global Crossing was congested (has too much data being

the route would still end up using Global Crossing for a connection to Facebook, but instead of going over Qwest's network, you'd be using Comcast's own national backbone, which went live a little under three years ago. Traffic on this backbone goes from Denver to Santa Teresa, Texas (near El Paso), then over to Los Angeles, then onto Global Crossing. Not the most direct route, but probably inexpensive for both Comcast and Facebook. Depending on congestion and the cost of various routes, the same traffic might have switched to Level3 in Denver, then traveled a more direct route to Facebook (this was the case the last time I ran a "traceroute" from my home connection to Facebook, a few months ago).

On Qwest, the route is much the same as with FRGP, except with the substitution of Qwest's DSL system for the FRGP network. Note, however, that this assumes Qwest.net/Windows Live is your DSL ISP (Internet Service Provider); with Qwest you can choose who the company

Hiking PA option

David Underwood
Staff Writer

A perfect blue sky, the warm sun shining on your face, beautiful scenic views, and a nice pair of hiking boots. What could be better? Anyone who finds themselves in a state of Zen while picturing the above, or needs a PA credit, should consider the Hiking PA class offered at Mines. This semester, the class has hiked some Golden-area landmarks such as North and South Table Mountains and Red Rocks. Though some hikes have been canceled due to inclement weather, there are plenty more hikes to come. According to class instructor Marianne Hutchens, the class is made for “people that are interested in being outdoors and having fun.”

“It’s a bit rocky and some of the courses can be kind of challenging, but as long as you’re okay with that, the class is great,” Hutchens explained. It’s a great opportunity to leave the books back in the cave and enjoy beautiful Golden, Colorado.

Just last year, the class was very much limited by time constraints and wasn’t able to do anything much in the way of hiking. This semester, however, the class has increased its length from a 50-minute class to a one-and-a-half hour class.

“This semester, since the class has been extended to an hour and a half, we actually have time to go out and have a real hike. When it was only fifty

minutes, it just wasn’t enough time,” explained Hutchens. Just enough time to suit up and go on a relaxing walk through a few of the Golden area’s outdoor attractions. The students, according to the instructor, seem to find the class pretty agreeable. “[They] generally want to be out there; they want to be outside and engage in the activity.”

The basic goal of the class, according to Hutchens, is simply to get people active, outdoors, and familiar with the Golden Area. “We try and inform the students of the Golden Area so that they can go out on their own other times.”

The class provides opportunities to go out and hike as well as a few basic training tips on proper hiking from Hutchens, such as proper hydration and attire.

On an average week, the instructor sends an email indicating whether class will be held that week. Assuming the weather is acceptable, class is held. The instructor emails directions to the students so they can either meet at the trailhead or, if rides are needed, at the Fieldhouse.

For Hutchens, the day involved going out and “getting paid to go outside and hike.” While Mines students can’t say exactly the same, it’s a great way to get a credit in a manner that doesn’t involve studying complex mathematics or chemistry of any kind, so get out there and hike!

Crash pads necessary!

LB Williams
Staff Writer

The Outdoor Recreational Center’s third biannual Bouldering Competition had students horizontal, clinging, swinging meters off the ground, reaching and leaping vertically off tiny holds, and all without the safety of ropes. With multiple competitors attempting different ‘problems’ simultaneously, the event made for a chaotic scene at the climbing wall this past Saturday.

Patrick Langendorfer, the ORC Management Intern, explained that “bouldering evolved from rope climbing because people needed to practice some of the tougher elements of climbing: cliff overhangs, technique, confidence building... That is why these mini-climbing routes are called problems.”

Most of the contestants were real fans of bouldering and had entered the contest for fun. Bouldering is their main physical activity and they utilize the ORC Climbing wall at least twice a week during the semester. Some have never bouldered outdoors before, though, and the ORC does not go on any Bouldering trips. That is because it is a dangerous activity. Crash pads were down and students were falling onto them throughout the competition.

Bouldering is a mental as well as physical competition. It requires perseverance, self trust, and planning. “In a more sophisticated event, we wouldn’t be able to see each other’s attempts. But it’s fine here. This is for fun,” stated Intermediate competitor Mallory Tayson-Frederick.

There were notably fewer female competitors this semester and none registered for the advanced division. Women were complemented as having a more fluid climbing style by the men. Alex Swanson admitted, “Women classically have less upper body strength,” and attributed her style to relying more on her legs and toes.

Teamwork was apparent during this individual competition. The atmosphere of the ORC Bouldering Competition was not cutthroat, nor selfish. “Everyone co-solves the problems, learning from each others triumphs and falls,” stated Langendorfer. When one climber completed a problem, everyone cheered.

The ORC had spent over a week preparing for the Bouldering event. 30 new ‘problems’ had to be planned, constructed, marked, and tested for the competition. Ten routes for each skill level (Recreational, Intermediate, and Advanced) are created that are further differentiated within each level of difficulty. It is physically true that a Rec-5 is harder than a Rec-4 and an A-1 is more complex than an I-10.

Competitors are welcome to try routes outside of their skill level. Eric Roberts, an EE undergrad, who prefers bouldering to climbing because, “You can do it more places, without having to get all geared up,” spent 8 strenuous minutes within an A-3 problem when he was only entered as an Intermediate.

The grading of each route leads to its point valuation. Aiming for higher valued routes, though you may fall more often, could clinch a

win in your skill category. Only 10 points per fall is deducted from the singular problem. Fall 6 times on a A-3 worth 3300 points is preferable to falling twice on an I-9 worth less to begin with. The grading system rewards testing your own limits.

Roberts’ daring and perseverance did pay off. He won first place in the men’s intermediate division. If there are less than three winners in a category, it is because less than three people entered that division. 37 CSM students competed on Saturday.

The cumulative point score of only the top five grossing routes of each competitor was used to determine the event winners. The top three entrants in each category won prizes donated by various businesses in the Denver-Metro area. Jimmy John’s sponsored mini sandwiches for the climbers.

As the afternoon wore on, the cloud of climbing-chalk dust grew thicker and the noticeable lack of a drink sponsor was disheartening. It may have been the reason why some climbers finished extra early, only completing their minimum 5 routes to be judged upon before leaving the competition.

The ORC Climbing Wall is open 7 days a week. Special ‘Bouldering Only’ hours are available during lunch Monday through Thursday. As with top rope climbing all equipment is beyond reasonably priced and available through the ORC. Unlike rope climbing, no certification or training is necessary. Stop by and any climbing wall attendant will help get you started.

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Oredigger website moves

Or, the many failures of College Publisher

Ryan Browne
Webmaster

Recently, the *Oredigger* has undergone some radical changes regarding our web presence. Starting early in spring semester of '08, our website was completely revamped. Early in fall semester of '08, we launched our blogs. At the beginning of this semester (spring '09), we moved our blogs from our main website to a new, Wordpress-powered server. Shortly, we will be finishing our move away from our current hosting company, College Media Network (tm), to a new website hosted on an *Oredigger*-controlled server.

These recent changes were necessitated by our current hosting provider, College Media Network (tm). The backend software that currently runs our website is called CollegePublisher 4.0, which for those of you who are versed in web programming, was written in ColdFusion.

The CollegePublisher software was supposed to be extremely customizable, allowing each paper to lay out their site in the manner that they felt best represented themselves. However, unlike other backend software, such as WordPress, they chose not to allow the papers to use the ColdFusion language to design their site, instead exposing a limited API (Application Programming Interface) known as the College Publisher Markup Language. This allowed only limited control over key features of our site. In addition, the CollegePublisher program revealed the programmers' lack of understanding of the tools available in the ColdFusion programming language.

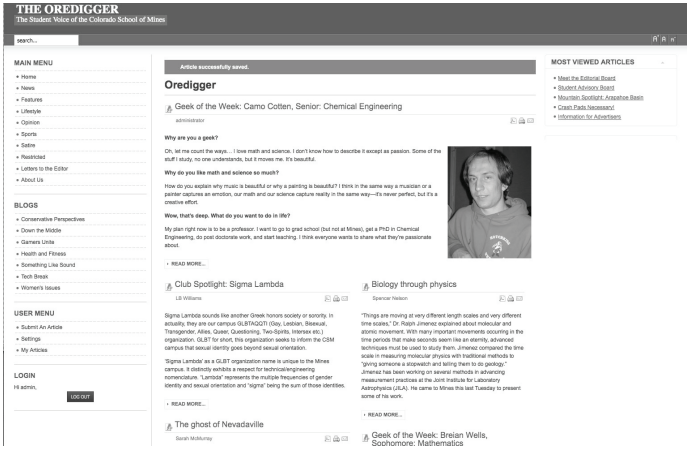
Each portion of our website, the menu bar, the banner, the poll, was a separate "object." In addition, we only had three position that we could place these "objects," left, center, and right. This made the layout feel like the old table-layout paradigm, which has been frowned upon in web design for many years. Had the papers been allowed to design their sites using the built-in functionality of ColdFusion, we would have been able to completely control the layout while still have access to the information that CollegePublisher currently allows along with the proper isolation from the

other papers.

You may have noticed that the *Oredigger* website takes several seconds to load, due to several factors. The servers are serving many websites, and I suspect, use very few of the caching mechanisms allowed by ColdFusion, if any. This causes the page to be "rebuilt" every time it is requested, which is the main cost, at something around 3 seconds per page. In addition, they have several visitor tracking solutions, which further slows down

Our new website allows control over our layout and the ability to augment, or completely rewrite the website. Our new website is designed for online newspapers, but is more optimized and customizable than the CollegePublisher software. It is written to be fully cross-browser compatible. This means that any two browsers, on any two computers, can connect to our website, and the pages will look identical.

This new website also allows us to post interactive features, audio and video reporting, and much more. The website will allow us to publish more articles, putting some exclusively online, and responding quickly to changes on campus. It will also allow you to subscribe to RSS feeds for certain sections of the paper, such as Fool's Gold. We are excited to have this new website, and we look forward to discovering just how we can best serve



The home page of the new oredigger.net

loading. Our new website will solve these problems. It takes advantage of the caching solutions available through PHP.

the campus.

If you have any suggestions, please email us at oredig@mines.edu.

Tim's two cents

All Bark, No Bite

Tim Weilert
Content Manager

There is a famous saying that goes something along these lines: "The world is run by those who show up." We live in a golden age, where ideas can be easily exchanged and communication is king. However, simple second-hand communication will never take the place of actually showing up to defend your ideas.

Recent events have shown that our campus is a vocal one, especially on issues of administration and the plus-minus system. Hundreds of people signed petitions, joined Facebook groups, and commented on web articles to express their views on the topic. But, when the time came

to actually show up (to any meeting of ASCSM, the Faculty Senate, etc.), the hundreds of people, whose names were scribbled on pieces of paper, were missing. Not surprisingly, some of these students' views did get through to the Faculty Senate (thanks to ASCSM President Kevin Duffy, to whom we should all be grateful), but the more ambitious goals fell by the wayside.

It is easy to express opinions; acting constructively on those views is difficult. As a community familiar with not taking the easy way out (i.e. we go to Mines, it is a hard school), why don't we see more students actually showing up? Please, if you have any opinion whatsoever, do not just write it out somewhere, ACT!

Letters to the Editor

Tim Weilert's opinion piece in the last issue of the *Oredigger* argued against the value of the democratic process with regards to "The plus/minus system." His arguments were largely defeatist and encouraged students to accept conditions, whatever they are. The presumption that students shouldn't be motivated because they are denied an official voice is ludicrous. If we are not given official representation, it is all the more important that we do all we can to get our voice heard. All movements for change start with a small group of motivated people. Tim states that "complaining is contagious," and indeed it is. The intent of protest is to excite a larger group of people to change things for the better. Throughout history, dissent and protest has been met with cruelty and retribution. Rarely has protest not uncovered a flaw with society. These flaws or grievances cannot be overlooked or dismissed as whining or complaining. Protests and complaints and grievances should be welcomed with a curious mind to investigate and rectify the flaw that is exposed in society, whatever that flaw may be. Individual trouble makers have no place in a productive work environment, but if you know that people also feel that there is an injustice happening it is your right and responsibility to organize and protest. No one should ever have to be in a terrible situation and not be able to change it. We should learn how to efficiently stand up for ourselves in the safety of our nurturing school environment before we go out into the real world. Weilert is partially right: the Mines community's tendency to complain is counterproductive, but only because there is no action taken regarding complaints. With regards to the plus/minus grading system, some students are taking action.

-Brian Orlick



Minds at Mines

Spring Break

Roby Brost
Staff Writer

There are two words that are almost guaranteed to bring a smile to any college student's face: spring break. For some that means visions of bikinis, beaches, and over-the-border fun. For others, powdery slopes and pristine mountain peaks. More likely, here on the beautiful Golden campus, those two words mean hours of lab walls or an extra opportunity to study for those upcoming exams. Still, those simple words have an almost magical power, guaranteed to lighten almost any college student's day. While students here may be more familiar with laboratory walls and study time than lazy afternoons off bronzing in the sun, they were presented with something most are well acquainted with; a hypothetical situation. Students were asked the following two part question. "What are your plans for spring break and since the TSA has changed airline restrictions again, you are only allowed to bring three things with you on your trip. What are they and why?"



"For spring break, I am going to go back home. Home is Hawaii. I'll probably spend all day on the beach. It's a tough job, lying on the beach all day, but someone has to do it. If I had to only choose three items to bring with me on the plane, I would bring a panda, a guitar, and a Bengal tiger. I'd bring the guitar so that I could play a really awesome tune if the plane was going down. I'd bring both the panda and the Bengal tiger because both are endangered species and the airline would get in huge trouble in the event that anything happened to them."

"B.Kizzle" Kimura

"For spring break I am going to Jackson Hole, Wyoming, to go snowboarding at that big badass ski resort. If I was going to get there by plane, and could only bring three things, I would bring dish soap, a talking mouse, and Dumbo. If the plane went down I could fly away and the mouse could convince Dumbo to jump out."

Mark Vander Hulst



"For spring break I'm going out of town. I would bring Chuck Norris, a parachute, and Bruce Willis so Chuck Norris would have something to beat on."

Gerardo Fraustro

"I am going to go skiing. But I wouldn't really fly to get there. The three things that I would bring would be my girlfriend Alex, my Xbox, and my dog. Why would I bring these things with me? Simple. They're my favorites."

Michael Grundy



"Over spring break, I am going to Las Vegas for my 21st birthday. I'm going with my mom so it should be a ton of fun. As far as bringing things on the plane, I would bring a toothbrush, a soft blanket, and a Rambo knife. I'd need something for survival if we crashed and I don't think that the toothbrush or the blanket would cut it."

Renee Francese

Editorial Policy
The *Oredigger* is a designated public forum. Editors have the authority to make all content decisions without censorship or advance approval and may edit submitted pieces for length so long as the original meaning of the piece is unchanged. Opinions contained within the Opinion Section do not necessarily reflect those of Colorado School of Mines or The *Oredigger*. The *Oredigger* does not accept submissions without identification and will consider all requests for anonymity in publication on a case-by-case basis. Submissions less than 300 words will receive preference.

Fool's Gold

“Paper planes, stick planes, and rock planes”

Mysterious hit and run

Golden police baffled

Benjmain M. Weilert
Pedestrian Pedestrian

For the last two months, a wave of hit and run incidents has plagued the quiet town of Golden. Pedestrians have become terrified to cross the street, lest they be killed. Golden Police are at a loss on how to capture the elusive criminal vehicle and its driver.

Police Chief Nathan Fullerton is confused on how this serial hit and run artist has eluded them for so long, “The conditions have been the same in each instance: a pedestrian would be crossing the street when they were hit by this car, being thrown back by at least a block, the car nowhere to be seen.” CSI: Golden has been dispatched to try to solve these murders.

According to Police Chief Stephen Larkins, every one of the nearly thirty incidents resulted in the pedestrian’s death, mostly due to internal bleeding and abdominal trauma. “What is strange about it is the second and third degree burns that show up on the victims.”

Forensic data collected at a recent crime scene shows that the vehicle tried to stop before hitting the pedestrian. “There were some impressive tire tracks that led up to the hit. Judging by the length of the tracks, and the fact that they were on fire, this guy was going pretty fast,” remarked Police Chief Gary Harrell.

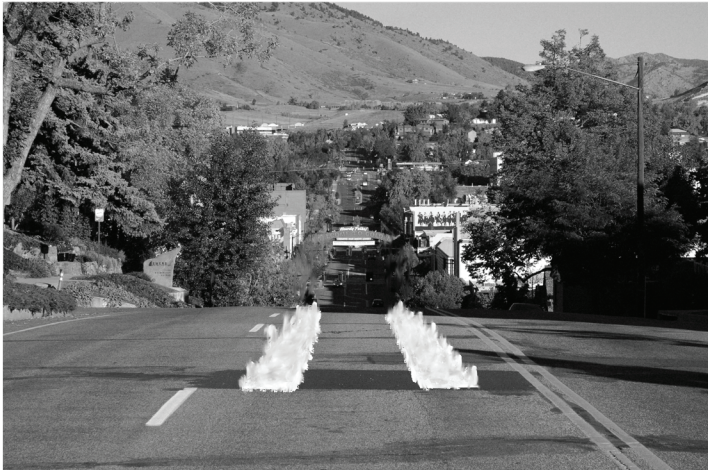
The single eye-witness ac-

count of any of the incidents was by a freshman resident of Weaver Towers, Marty McFly, “I was returning to the Towers from parking my car at the Ford building, when I saw this car that was obviously speeding down 19th street and hit some guy. After that, the car just disappeared.” McFly commented that the speed radar recorded a reading of 88 miles per hour.

However mysterious this vehicle is, Golden Police have a few leads to a suspect. Police Chief Jeremy Correll explained, “All the victims have an imprint on their abdomen. When looked at in a mirror, we see that there are three initials, DMC. After doing a little bit of research on Google, we found two suspects. It’s either the hip hop artist Darryl McDaniels or it’s some guy who owns a DeLorean.”

When the records of the Department of Motor Vehicles were examined, the only registered DeLorean in a 50 mile radius belongs to a Dr. Emmett Brown, who teaches Physics at the Colorado School of Mines. When this intrepid reporter went to the Physics department to question Dr. Brown, he was unavailable and a sign on his office door said, “Gone to Old West, be back in 30 minutes.” The sign then mysteriously faded to nothing.

Any information in regards to these incidents should be relayed to the Golden Police department, care of Police Chief John Roybal. A cash reward has been set up by the families of the victims that will be awarded to the person who can provide information leading to the capture and conviction of the suspect at large.



BENJAMIN M. WEILERT / OREDIGGER

“Tire Tracks. Scene of the crime”

Because SolidWorks says so

Janeen Neri
Finite Element Student

The student edition of SolidWorks, a popular 3D CAD program used in many EP-ICS classes at Mines, is set to roll out a new feature in its next build: the sleep cycle optimizer. Affectionately called “the SCOlder” by the SolidWorks testing and development team, the purpose of SCO is to ensure that often night-owlish college students get the proper amount of sleep.

“We’ve been planning this for a while,” added SolidWorks programmer Whit Shaper; “this isn’t a totally new idea for us. We’ve been testing SCO features for several versions now, and the results look good.” Most notably, the current version of SolidWorks piloted the now-famous “click here to stop dissection” window.

“That feature was definitely more challenging than it looks,” said Shaper, “since we had to ne-

gotiate with not only the antivirus companies, but also the [Windows] Vista development team to keep them from inadvertently blocking it. Not to mention the wayward user.”

The current version of SolidWorks aims to persuade the user to turn off the computer at “a very generous bedtime,” said Muthers, by opening a “dissection” window at 11:00 PM every night. To prevent students from ignoring the window, the program is set to continuously reset the focus of the computer onto the SolidWorks window, interrupting any “chatting” or “instant messaging” that the misguided teenager may be engaging in at such an unseemly hour. Furthermore, SolidWorks also has clearances to thwart the more tech-savvy user’s attempts to close the program through Task

Manager; like a motherly orc, the window simply respawns after several seconds.

So far, the positive response from parents has been overwhelming. “And fortunately for us,” said Shaper, “college kids don’t talk about it much. We think, in particular, it is the ones at high-workload tech schools. We have to assume that, deep down, they like this feature too.”

This is good news for SolidWorks; the next version of SCO is rumored to have both an earlier bedtime setting and the power to completely shut off the user’s computer until early the next morning. “We may package an alarm in with it too,” said Shaper, “so when the

The next version of SCO is rumored to have the power to completely shut off the user’s computer until early the next morning.

computer turns on at 4 AM, it ensures that the kid is ready to start another day of honest work. But getting on the ‘ignore’ lists of all the

security software [companies] took longer than we anticipated. We’re still trying to figure out why SCO sets off so many false alarms.”

NBA bans shoes

Mike Stone
Chief Sports Analyst

The NBA announced Monday that players of the NBA will no longer be allowed shoes during NBA basketball games. The controversial decision came after a series of mandates made dress code more and more conservative.

“We just want to play ball,” offered Nuggets Forward, Carmelo Anthony. The Denver Nuggets Sports Staff has already adapted to the new regulation in order to ease the minds of its players. All the Nuggets players have received uniform non-slip socks with “extra-warm toe pockets”

The mandate to not allow shoes came from three significant steps. First, Miami Heat Guard Dwayne Wade cut his cheek and put decorative band aids on it. When the cut healed and Wade still sported the self-promoting band aids, the NBA banned them to make players adhere to uniforms. Realizing that different brands of shoes allow the same promotion for players, the NBA banned those too. Now players are forced to stick to dress code.

“There are actually plenty of benefits to no shoes,” said NBA spokesman Don Knots, “First and foremost, there’s no more of that annoying ‘squeaky squeaky’ squeaking during the games. We get it! You’re planting your foot! Second, players will no longer have to face dreadful

athlete’s foot. Third, the ice rink below the boards should cool those hot feet right down during a game.”

The new bylaw has impacts for companies outside the NBA as well. Custom shoemakers like “Big Man Shoes” in Maryland and “Put A Foot In It” in Texas are rumored to go out of business without valued shoe customers like Shaq. “NBA players have the biggest feet out of any demographic. To restrict shoes, you would restrict custom shoemaking in America! The NBA already had a required shoe size of 13 just to sit on the bench!,” screamed “Put A Foot In It” President, Nancy Pelosi.

New York based shoe mogul Nike has already changed their advertising campaign and dropped all of their NBA representatives. Players like Kobe Bryant and Paul Pierce will have to settle for millions of dollars a year and not receive anything extra from endorsements. As to the players’ mental health in this area, the NBA has offered no comment.



MIKE STONE / OREDIGGER

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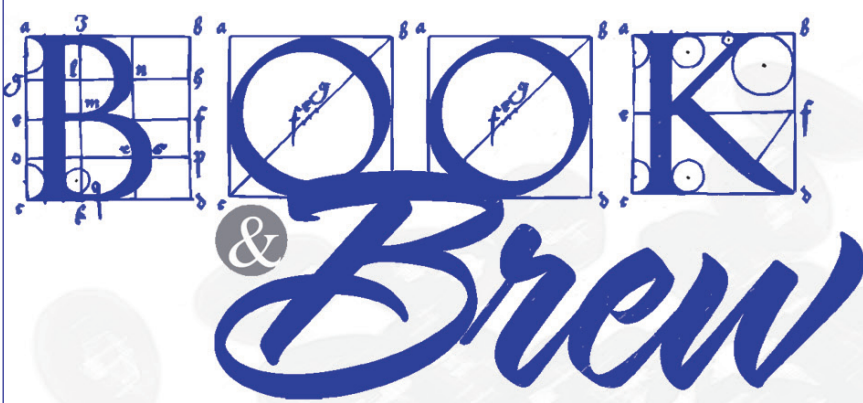
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